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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/942,146 | 06/26/2002 | Teresa Compton | 960296.98342 | 6687 |

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| EXAMINER | |
|---|---|
| LI, BAO Q | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1648 | |

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/942,146 | COMPTON ET AL. | |
| | Examiner | Art Unit | |
| | Bao Qun Li | 1648 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 December 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *6-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

Amendment filed on November 05, 2003 has been acknowledged. Claims 1-5 and 13-14 have been canceled. Claims 6-12 are pending and considered before the examiner.

### *Priority*

1. This application filed under former 37 CFR 1.62 lacks the necessary reference to the prior application. A statement reading "This is a division of Application No. 09/627,986, filed 07/28/2000." should be entered following the title of the invention or as the first sentence of the specification. Also, the current status of the parent nonprovisional application(s) should be included.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6-10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 6 and 11 are vague and indefinite in that the metes and bounds of "a fragment of glycoprotein O " are not defined. The claims are interpreted in light of the specification; however, the specification does not give the definition of "a fragment of glycoprotein O". This affects the dependent claim 7.

5. Claims 8-10 are unclear and indefinite because they are ultimately dependent on the canceled claim 4. Moreover, even if the canceled claim 4 is considered, claims 8-10 are still rejected because claim 8 recites the limitation "the polypeptide" in claim 4 and claim 9 recites the limitation "vaccine" in claim 4, there are insufficient antecedent bases for these limitations in the claim 4 and its dependent claim 3. This affects the dependent claim 10. Applicants are suggested to amend the claims to a correct independent claim.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 6-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention (Examiner presumes that claims 8-10 are dependent on the independent claim 6).

8. The test of the enablement is whether one skilled in the art could make and use the claimed invention from the disclosures in the application coupled with information known in the art would undue experimentation (See United States v. Theketronic Inc., 8USPQ2d 1217 (fed Cir. 1988). Whether undue experimentation is required is not based upon a single factor but rather a conclusion reached by weighting many factors. Theses factors were outlined in Ex parte Forman, 230 USPQ 546 (Bd. Pat. App. & Inter. 1986) and in re Wands, 8USPQ2d 1400 (Fed. Cir. 1988). These factors include the following:

9. 1). & 2) State of the art and Unpredictability of the field.

10. The state of art teaches that the recombinant truncated human CMV gB polypeptide combined with adjuvant MF59 or aluminum hydroxide gel has been tested in clinic for inducing a neutralizing antibody (Gonczol et al. Exp. Opin. Biol. Ther. 2001, Vol. 1(3), pp. 401-412, see section of 2.3 Subunit glycoprotein B on page 403-404), which contains some neutralizing domains or epitopes for some neutralizing antibodies. However, the result for preventing CMV infection by this subunit glycoprotein is still need to be approved as taught by Gonczol et al. Goncozol et al. summarized that both neutralizing antibodies and cell-mediated immunity are required for prevention of CMV infection. The art at the invention was filed and even today, does not teach that CMV glycoprotein O or any fragment of the glycoprotein O contains any neutralizing epitope and it is able to inducing any neutralizing antibody as well as cell-mediated immune response.

11. Moreover, CMV infection is very common in general population and it usually comes as an asymptomatic or subclinical infection. Following primary infection, CMV usually establishes a life long latent infection and the virus genome remains present in various organs and cells as evidenced by Slobedman et al. (Blood 2002, Vol. 100, No. 100, pp. 2867-2873, see abstract) and Reddehase et al. (J. Clinic. Virol. 2002, Vol. 25 Suppl. 2, pp. s23-s36, see abstract). Today, it is a central unsolved issue in the understanding of CMV biology and its latent infection. Therefore, it is unpredictable how glycoprotein O or fragment thereof can be used as a drug or vaccine for treating or preventing the asymptomatic or latent CMV infection.

12. Assuming that CMV glycoprotein O can induce an antibody response since any viral protein can be immunogenic, however, it needs to prove that whether the antibody induced by the glycoprotein O or any fragment of at least 9 aa of glycoprotein O is a neutralizing antibody in an art recognized animal model. The date of an in vitro cell line test cannot be extrapolated into a result in vivo. It has many experiments need to be done before the CMV glycoprotein O or its fragment thereof is concluded as a drug or vaccine.

13. 3) & 4) Number of working examples and Amount of guidance.

14. The specification only teach that anti-gO antiserum inhibit the CMV infection in a cell line setting system. Applicants present no working examples of the claimed invention, e.g. glycoprotein O or any fragment therefor can inhibit the CMV infection in vivo. Applicants do not teach which fragment containing at least 9 amino acid residues of the glycoprotein O has a neutralizing epitope that can induce an neutralizing antibody to protect CMV infection in vitro. Applicants are deficient for teaching that any glycoprotein O or fragment thereof can be used as a drug or vaccine for treating or preventing CMV infection in vivo. Applicants present no guidance on how the skilled artisan would practice successfully the claimed invention either.

15. 5) Scope of the claims.

16. The claims are very broadly directed to use the CMV glycoprotein O or any fragment thereof comprising at least 9 amino acids as a drug or vaccine in vivo.

17. 6) &7) Nature of the invention and Lever of the skill in the art.

18. The invention involves one of the most complex and unpredictable fields of CMV vaccine or anti-CMV drug development, which require a considerable high technique and art recognized animal model for approval.

19. Considering the unpredictable field, the imitated disclosure of the specification does not constitute an adequate teaching and supporting for stated claims. See Fiers v. Revel (25USPQ2d 1601 at 1606; and also decision by the Federal Circuit with regard to the enablement issues see Genentech Inc. v. Novo Nordisk A/S, 42 USPQ2d 1001-1007). For example, the CAFC stated that "It is the specification, not the knowledge of one skilled in the art that must supply the novel aspects of an invention in order to constitute enablement." (See page 1005 of the decision). In the instant case, the specification does not teach or provide an adequate teaching and guidance for a vaccine or drug made by the claimed glycoprotein O or fragment thereof. An in vitro date cannot be extrapolated as a result in vivo. This means that the disclosure must adequately guide the art worker to practice and use the invention with expected success and without undue experimentation

20. Hence, considering large quantity of experimentation needed, the unpredictability of the field, the state of the art, and breadth of the claims, it is concluded that undue experimentation would be required to enable the intended claim.

***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bao Qun Li whose telephone number is 703-305-1695. The examiner can normally be reached on 7:00 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 703-308-4027. The fax phone number for the organization where this application or proceeding is assigned is 703-308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Bao Qun Li
November 14, 2003

JAMES HOUSEL 11/17/03
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600